PROJECT CHARGE: 1702

PROJECT TITLE: SELECTIVE FILTRATION

PERIOD COVERED: March 1 - March 31, 1977

PROJECT LEADER: A. J. Kassman

DATE OF REPORT: April 6, 1977

CO AND NO REMOVAL

The Co/Al_2O_3 catalyst has been found to give two bands in optical reflectance which are not associated with cobalt. One, at $\sim$ 250 nm, is due to the superoxide ion, O_2^-, which has been identified in the electron paramagnetic resonance (EPR) spectrum. The second band, located at < 220 nm, is as yet unidentified. Since the superoxide ion is not expected to take part directly in a catalytic process, this band may be associated with the catalytically active oxygen species. The $O^=$ ion has been eliminated as a possibility because of the absence of other absorbance bands that would be associated with it. Absorbance bands for O^- and OH^- are known at 185-205 nm, and these species would be highly reactive for surface oxidation. However, these species have been undetected in EPR and their concentration, if present, would have to be extremely low. Another possibility, the peroxide ion, $O_2^=$, cannot be observed in EPR and other means are being investigated to determine its presence.

FILTER CONSTRUCTION

Based on the results of high speed cinematography and descriptive panel evaluations we have observed an association between flow characteristics and some subjective response features. These associations, if real, would be highly emphasized in low delivery systems. We are constructing a series of flow baffles which can be attached to filters. In this way cigarettes do not have to be altered to change the smoke delivery pattern, but merely attached to the baffle. Smoke delivery patterns from the baffles will be filmed to ensure that the desired characteristics have been achieved before subjective evaluation is pursued.

CO_2 IMPREGNATION SYSTEM DESIGN

A majority of the calculational problems involved in modelling the impregnation system have been resolved. Criteria were formally established for determining critical flow, position of normal shock waves, receiver and reservoir conditions, and pipe conditions. Experiments at the pilot plant are in progress

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for providing some additional data for checking the validity of the model and the computational procedures.

REFERENCES

A. J. Kassman, Notebook 6612, pp. 72-74.
D. B. Losee, Notebook 7006, p 13.
R. W. Dwyer, Notebook 6897, pp. 56-59.

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